

FERRAN WHEAL VIRGIN.—George E. Tremayne, Charles Oates, Jan. 5: We have much pleasure in informing you that we have to-day cleared the 26 fms. to Oate's winze. We have also cleared this winze, and are pleased to say that the lode has more than equalled our expectations. It is $2\frac{1}{2}$ ft. wide, and worth fully 15 cwt. of lead per fathom. We have also broken lead in the bottom of this level and north of the winze for 20 fms. in length. There are two

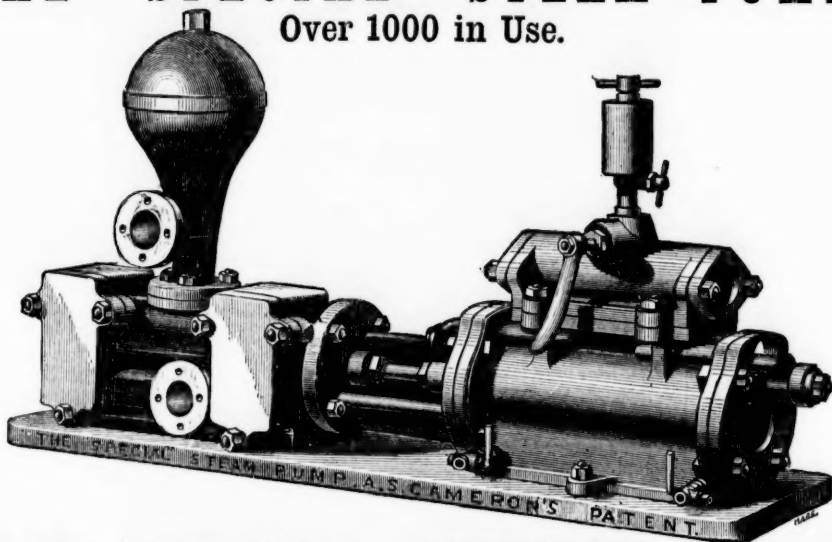
TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON,
 CORNWALL WORKS (TANGYE BROTHERS), BIRMINGHAM.

SOLE MAKERS OF
 THE "SPECIAL" STEAM PUMPS.
 Over 1000 in Use.

IN USE AT

- The Black Boy Collieries,
Bishop Auckland.
- The Westminster Collieries,
Wrexham.
- The Monkwearmouth Colliery,
Sunderland.
- The South Benwell Colliery
Newcastle-on-Tyne.
- Messrs. Bagnall and Sons Colliery,
South Staffordshire.
- Acomb Colliery, Hexham.
- North Bitchburn Colliery,
Durham.
- Brancepeth Colliery,
Durham, &c., &c.
- And numerous others.



NOTE.

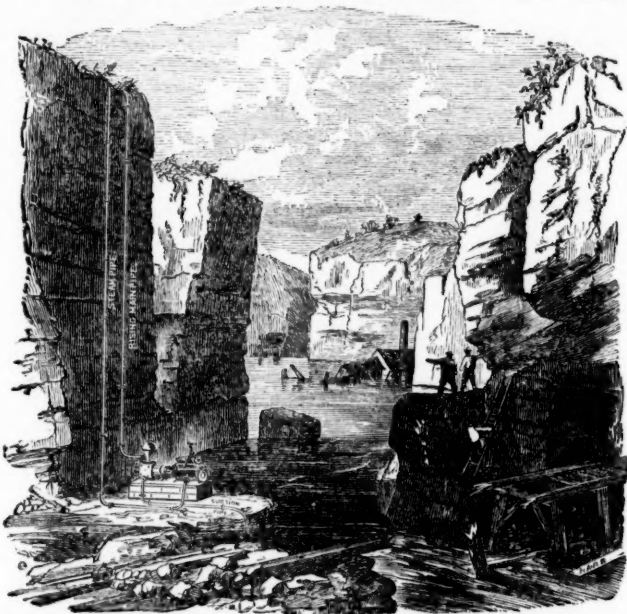
- Requires NO Shafting, Gearing, Riggers, or Belts.
- All Double-Acting:
- Works at any Speed, and any Pressure of Steam.
- Will Force to any Height.
- Delivers a constant stream.
- Can be placed any distance away from a Boiler.
- Occupies little space.
- Simple, Durable, Economical.

NO FLY-WHEEL, CRANK, GOVERNORS, CONNECTING ROD, GUIDE, OR ECCENTRIC.

Supplied to H.M.'s Arsenal and Dockyards at Woolwich, Chatham, and Devonport, also for use on board H.M.'s Ships, Hercules and Monarch.
 FORTY THOUS ND GALLONS PER HOUR IS BEING RAISED 40 FEET HIGH AT MR. McMURRAY'S PAPER MILL, WANDSWORTH, BY THE "SPECIAL" STEAM PUMP.
 THE "SPECIAL" STEAM PUMP AS APPLIED TO DRAINING QUARRIES.

The engraving illustrates the "SPECIAL" Steam Pump as employed in draining quarries. At the Bangor and Carnarvon Slate Company's Quarries, in Wales, four or five of these pumps, of different dimensions, are at work, as well as at other quarries in various parts of the kingdom.

The pump being fixed in the required position, steam can be supplied by means of a felted steam-pipe from any boiler situated several hundred feet away from the pump; and although a little extra condensation would in such case take place, this system



of draining quarries is found far more economical than employing detached engines and pumps, with their cumbrous details of shafting, gearing, riggers, and belts.

The "SPECIAL" Steam Pump can be adapted to work at either high or low pressure steam, and to discharge the water to a vertical height of from 200 to 400 feet. For very high lifts, pumps with long strokes are recommended.

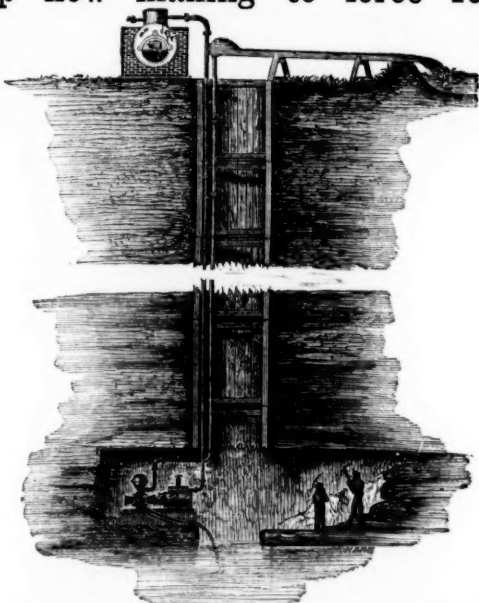
The pump is very portable, and can be readily lowered nearer to the water as the work proceeds.

THE "SPECIAL" STEAM PUMP AS APPLIED FOR DRAINING MINES.

One "SPECIAL" Steam Pump now making to force 1040 feet in one direct lift.

The arrangement in the accompanying illustration shows an economical method of draining mines without the expense of erecting surface-engines, fixing pump-rods, or other gearing. A boiler adjacent to the pit's mouth is all that is necessary on the surface; from thence steam may readily be taken down, by means of a felted steam-pipe, to connect the pump with the boiler. The pump may be placed in any situation that may be convenient for working it, and connecting the steam, suction, and delivery pipes.

These engines can be fixed and set to work in a



comparatively short time, and also at a very small outlay. They are used in large mines as auxiliary engines, and will be found invaluable adjuncts in all mining operations.

To estimate the quantity of water to be raised by any given size of pump refer to the tabulated list below. It is recommended to use long-stroke pumps where the height exceeds 100 ft., so that the largest result may be obtained with a minimum wear and tear of the pump pistons and valves. The pumps are provided with doors for ready access to all working parts.

PRICES OF THE "SPECIAL" STEAM PUMPS.

Diameter of Steam Cylinder	2 1/2	3	4	4	6	6	6	7	7	7	8	8	8	8	10	10	12	12	14	16	24
Diameter of Water Cylinder	1 1/2	1 1/2	2	4	3	4	6	5	6	7	4	6	7	8	6	7	8	10	12	7	10
Length of Stroke	6	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	18	24	24	24	24
Strokes per minute	100	100	75	50	50	50	50	50	50	50	50	50	50	50	50	50	35	—	—	—	—
Gallons per hour	310	680	910	3250	1830	3250	7330	5070	7330	9750	3250	7330	9500	13,000	7330	9500	13,000	—	—	—	—
PRICE.....	£10	£15	£20	£35	£30	£40	£47 10	£50	£52 10	£57 10	£50	£55	£65	£75	£70	£80	£100	—	—	—	—

IF BRASS LINED, OR SOLID BRASS OR GUN-METAL WATER CYLINDERS, WITH COPPER AIR VESSELS, EXTRA, ACCORDING TO SIZE.
 Any Combination can be made between the Steam and Water Cylinders, provided the Lengths of Stroke are the same, thus—8 in. Steam and 3 in. Water, or 10 in. Steam and 3 in. Water, adapted to height of lift and pressure of steam, and so on.

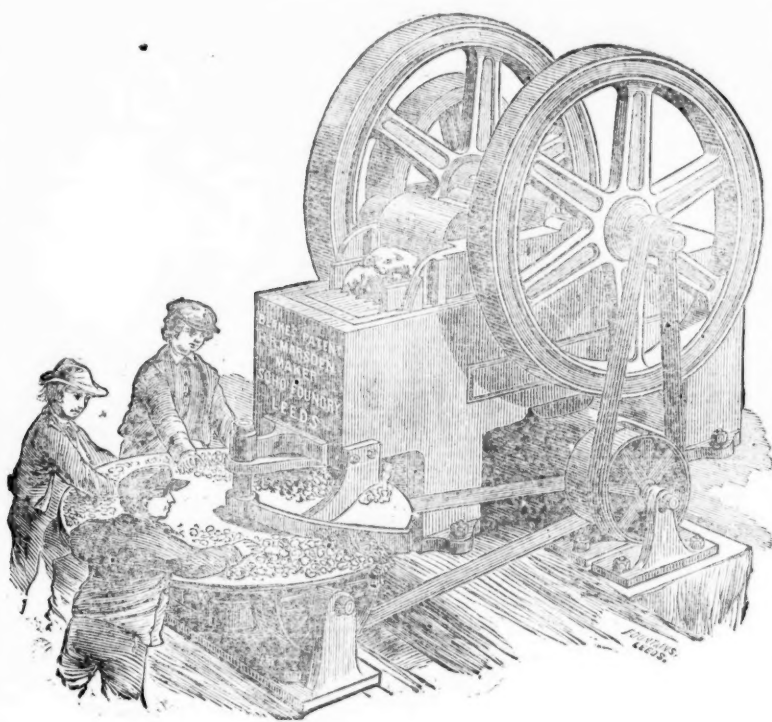
TANGYE BROTHERS & HOLMAN : Offices & Warehouse, 10, Laurence Pountney-lane, London, E.C.

AWARDED TWENTY GOLD AND SILVER FIRST-CLASS PRIZE MEDALS.

IMMENSE SAVING OF LABOUR.
TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, MACADAM ROAD MAKERS, &c., &c.**BLAKE'S PATENT STONE BREAKER,
OR ORE-CRUSHING MACHINE,**

FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.

This is the only machine that has proved a success. This machine was shown in full operation at the Royal Agricultural Society's Show at Manchester, and at the Highland Agricultural Society's Show at Edinburgh, where it broke 1½ ton of the hardest trap or winstone in eight minutes, and was AWARDED TWO FIRST-CLASS SILVER MEDALS. It has also just received a SPECIAL GOLD MEDAL at Santiago, Chili. It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England. Read extracts of testimonials:—



The Parys Mines Company, Parys Mines, near Bangor, June 6.—We have had one of your stone breakers in use during the last 12 months, and Capt. Moreton reports most favourably as to its capabilities of crushing the materials to the required size, and its great economy in doing away with manual labour.

For the Parys Mining Company,
H. R. Marsden, Esq. JAMES WILLIAMS.

Eaton Emery Works, Manchester.—We have used Blake's patent stone breaker made by you, for the last 12 months, crushing emery, &c., and it has given every satisfaction. Some time after starting the machine a piece of the moveable jaws about 20 lbs. weight, chilled cast-iron, broke off, and was crushed in the jaws of the machine to the size fixed for crushing the emery.

THOS. GOLDSWORTHY & SONS.

H. R. Marsden, Esq.

Alkali Works, near Wednesbury.—I at first thought the outlay too much for so simple an article, but now think it money well spent.

WILLIAM HUNT.

Welsh Gold Mining Company, Delgelly.—The stone breaker does its work admirably, crushing the hardest stones and quartz.

WM. DANIEL.

Kirkless Hall, near Wigan.—Each of my machines breaks from 100 to 120 tons of limestone or ore per day (10 hours), at a saving of 4d. per ton.

JOHN LANCASTER.

Ovoca, Ireland.—My crusher does its work most satisfactorily. It will break 10 tons of the hardest copper ore stone per hour.

WM. G. ROBERTS.

General Fremont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 20 men, or \$75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate.

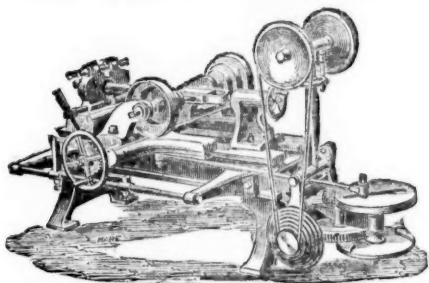
SILAS WILLIAMS.

Your stone breaker gives us great satisfaction. We have broken 101 tons of Spanish pyrites with it in seven hours.

EDWARD AARON.

H. R. Marsden, Esq. Weston, near Runcorn.

For illustrated catalogue, circulars, and testimonials, apply to—

H. R. MARSDEN, SOHO FOUNDRY,
MEADOW LANE, LEEDS,
ONLY MAKER IN THE UNITED KINGDOM.**Patent Duplex Cotter-Hole and
Key-Bed DRILLING MACHINE.**

The advantage of this Machine is, that the Drills are only requisite to be half the length of the Cotter-hole required to be cut, as they operate simultaneously from both sides of the object, meeting accurately in the middle, and doing the work in less than half the usual time, besides producing a smooth hole on account of short, stiff Drills being used, thus producing a much better class of work, hitherto unattainable by the Machines with one long Drill.

The Machine is made in three sizes, and often made with double set of Head Stocks, to drill both ends of a connecting rod at the same time.

CRAVEN BROTHERS,
MAKERS OF EVERY DESCRIPTION OF MACHINE TOOLS,
VAUXHALL IRONWORKS, OSBORNE STREET, MANCHESTER.**A LIBERAL COMMISSION**

ALLOWED TO ENGINEERS, AGENTS, AND OTHERS FOR INTRODUCING

THE PATENT DON LUBRICATING OIL

TO THEIR FRIENDS AND CUSTOMERS.

It is quite as good and durable a lubricant as the best, and is little more than half the price of the common kinds. While there is no more serviceable or economical Oil for Engines and Machinery, it is the best known lubricant of the axles of Railway Trucks and Carriages, and it may be applied in the ordinary grease boxes, at a saving of one-half over grease. Particulars forwarded on application.

EXTRACTS FROM LETTERS RECEIVED:—

From JAMES NASMYTH, Esq., the Inventor of the Steam-Hammer.

"I am highly pleased with it as a most effective and durable lubricator."

From the Engineer, BRIDGEWATER TRUSTEES, Walkden.

"I find its lubricating qualities effective and durable."

From DUBS AND CO., Glasgow Locomotive Works.

"We find it a good lubricating oil, and very cheap."

From JOHN HARTOP, Esq., Manager for Earl Fitzwilliam, Elsecar.

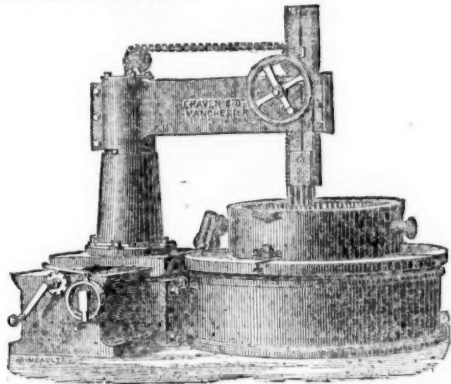
"The oil answers my purpose well."

From Messrs. RICHARD EVANS AND CO., Haydock Collieries.

"It answers quite as well as yellow grease (for railway wagons), and at a saving of forty-eight per cent."

DUNCAN BROTHERS 20 Unity-buildings, Liverpool, Sole Importers.**Improved WHEEL-MOULDING
MACHINE.**

This Machine will Mould the Teeth of Bevel, Spur, and Worm Wheels, also Straight Racks, of any Pitch with a whole Pattern.



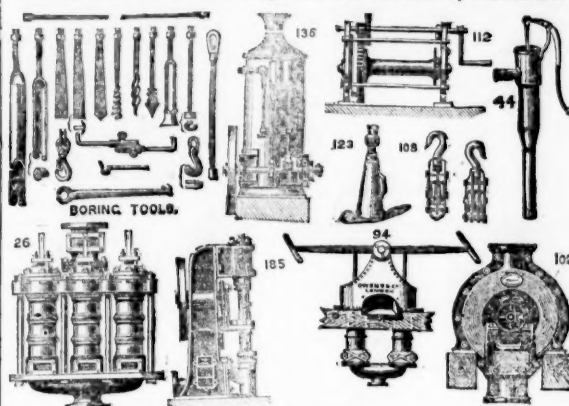
Some of the many advantages in the use of this Machine are, that the Teeth of Wheels are perfectly straight across the Tooth, no taper being required to draw the pattern; the Wheels are true in diameter, not depending upon a wood model, which sometimes alters in shape; Wheels of any pitch and form of teeth can be moulded without the use of a whole expensive pattern; and wheels to work into each other can be made mathematically correct in form, at the small cost of segment patterns.

The Machine is made in various sizes to mould wheels of any diameter.

S. OWENS AND CO.

Hydraulic and General Engineers,

WHITEFRIARS STREET, FLEET STREET, LONDON



MANUFACTURERS OF

BORING TOOLS, for testing ground for Minerals, Bridge Foundations, Artesian Wells, &c., to any depth.

- No. 26.—Treble Barrel and other Deep Well Pumps,
- No. 136.—Vertical and other Portable Steam-engines,
- No. 185.—Horizontal and Vertical Steam Pumping-engines,
- No. 112.—Single and Double-purchase Crab Winches,
- No. 108.—Pulley Blocks of all sizes,
- No. 123.—Bottle and other Lifting Jacks,
- No. 94.—Double-barrel Pumps, for Mine or Quarry use
- No. 44.—Portable Wrought-iron Pumps, ditto ditto
- No. 102.—Bernays's Patent Centrifugal Pumps, of all sizes,

ALSO EVERY OTHER DESCRIPTION OF

HYDRAULIC AND GENERAL MACHINERY,

TURBINES, WATER WHEELS, WIND ENGINES,
THE HYDRAULIC RAM, FIRE ENGINES, &c.

Catalogues and Estimates on application.

M'TEAR AND CO.'S CIRCULAR FELT ROOFING

FOR

GREAT ECONOMY

AND

CLEAR WIDE SPACE.

For particulars, estimates,
and plans, address,—

M'TEAR & CO.,

20, BUDGE ROW, CANNON
STREET, LONDON;54, PORTLAND STREET,
MANCHESTER;

OR,

CORPORATION STREET,

BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds, farm buildings, &c., the principals of which are double bow and string girders of best pine timber, sheathed with ½ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 20s. to 60s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INDURATED FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity required, 8d. per gallon.

IMPORTANT TO CHURCHWARDENS, AND OTHERS.

WITH A VIEW TO POPULARISE

PUBLIC TIME INDICATORS,

We have produced a speciality that places us beyond the bounds of competition. We beg to call attention to our Works, Stable, or Yard TURRET TIME-PIECE, all complete, ready for fixing. Dial 2 feet, raised figures, gold and blue ground; can be fixed by any joiner in a day.

Price, net cash £15 0 0

If 3 feet dial 16 10 0

4 feet dial, and stronger works .. 20 0 0

All warranted two years.

Complete Church Clocks from £40.

J. BAILEY AND CO.,

Turret Clock and Lightning Conductor

Makers to the late Earl of Rosse, the

Bishop of Manchester, Sir F. Crossley,

Bar., British and Foreign Govern-

ments, &c., &c.,

ALBION WORKS, SALFORD,

LANCASHIRE.

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Offices, 42, Grey-street, Newcastle-upon-Tyne; 50, Howard-street, North
Shields; 195, High-street, Sunderland.

TO NERVOUS SUFFERERS—READ AND JUDGE FOR YOURSELVES.

DR. BARNES has just published 20,000 copies of the "SECRET FRIEND," a most valuable book to young men on the Treatment and Cure of NERVOUS and PHYSICAL DEBILITY. LOSS OF MEMORY, DIMINUTION OF SIGHT, LASSITUDE, PAINS IN THE BACK, LOCAL WEAKNESS, DEPRESSION OF SPIRITS, &c., with plain directions for perfect restoration to health and vigour. Sent post free on receipt of two stamps. Address, Dr. J. A. BARNES, 20, Thornhill-crescent, Caledonian-road, London, N.

SPECIAL PAMPHLET ON NERVOUS DEBILITY.—Read the Warning Voice on the Special Treatment of Nervous, Mental, and Physical Debility. Lowness of Spirits, Dimness of Sight, Indigestion, &c. Illustrated with cases. Gives rules for cure by the New Medicines. Dr. SMITH will, for the benefit of country patients, on receiving a description of their case, send a letter of advice GRATIS. Pamphlet (160 pages) free by post in an envelope on receipt of two stamps.—Dr. SMITH, 8, Barton-crescent, London, W.C.

Just published, post free for two stamps,
WONDERFUL MEDICAL DISCOVERY.
Showing the true causes of Nervous, Mental, and Physical Debility, Lowness of Spirits, Indigestion, WANT OF ENERGY, PREMATURE DECLINE, with plain directions for PERFECT RESTORATION TO HEALTH AND VIGOUR IN A FEW DAYS.

The most important fact that these alarming complaints may easily be removed WITHOUT MEDICINE

is here clearly demonstrated, and the entirely new and highly successful treatment, as adopted by the author, fully explained, by means of which

EVERYONE IS ENABLED TO CURE HIMSELF

Perfectly, and at the least possible cost.

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